

Treatment Intervention Advisory Committee Review and Determination

Date: August 13, 2014

To: DHS/DLTC

From: Wisconsin Department of Health Services Autism and other Developmental Disabilities ^{LC}
Treatment Intervention Advisory Committee: Lana Collet-Klingenberg, Ph.D. (chairperson)

RE: Determination of applied behavior analysis as a proven and effective treatment for individuals with autism spectrum disorder and/or other developmental disabilities

This is an initial review

This is an updated review of the initial review dated May 2, 2012.

Section One: Overview and Determination

Please find below a statement of our determination as to whether or not the committee views applied behavior analysis as a proven and effective treatment for children with autism spectrum disorder and/or other developmental disabilities. In subsequent sections you will find documentation of our review process including a description of the proposed treatment, a synopsis of review findings, the treatment review evidence checklist, and a listing of the literature considered. In reviewing treatments presented to us by DHS/DLTC, we implement a review process that carefully and fully considers all available information regarding a proposed treatment. Our determination is limited to a statement regarding how established a practice is in regard to quality research. We do not make funding decisions.

In the case of applied behavior analysis, please refer to the attached reference listing that details the reviewed research. The committee's conclusions regarding applied behavior analysis include an acknowledgement that sufficient, well-designed research exists across researchers, settings, behaviors, translational research, and subjects to support its use. The materials reviewed are summarized in Section Four and include books, independent reviews, experimental research, and applied research covering decades.

In sum, it is the decision of the committee that applied behavior analysis has well-established evidence to support our position it is a Level One therapy, and is a proven and effective treatment for individuals with autism spectrum disorder and/or other developmental disabilities.

Description of proposed treatment

Applied behavior analysis (ABA) is a discipline concerned with the application of behavioral science in real-world settings such as clinics or schools, with the aim of addressing socially important issues such as behavior problems and learning (Baer, Wolf, & Risley, 1968). It involves the application of operant and classical conditioning to modify human behavior, especially as part of a learning or treatment process.

Synopsis of review

The sheer volume of independent, published and peer-reviewed articles, in addition to acknowledgement by authoritative bodies such as the National Professional Development Center on Autism Spectrum Disorders and the National Autism Council's, National Standards Report, and positive position statements from professional organizations establish applied behavior analysis as a level one, well-

established treatment for individuals with autism spectrum disorders and with other developmental disabilities across a span of ages. A non-exhaustive reference list including book references, reviews of literature and published research is provided at the end of this memo.

Section Two: Rationale for Focus on Research Specific to Comprehensive Treatment Packages (CTP) or Models

In the professional literature, there are two classifications of interventions for individuals with Autism Spectrum Disorder (National Research Council, 2001; Odom et al., 2003; Rogers & Vismara, 2008):

- (a) **Focused intervention techniques** are individual practices or strategies (such as positive reinforcement) designed to produce a specific behavioral or developmental outcome, and
- (b) **Comprehensive treatment models** are “packages” or programs that consist of a set of practices or multiple techniques designed to achieve a broader learning or developmental impact.

To determine whether a treatment package is proven and effective, the Treatment Intervention Advisory Committee (TIAC) will adopt the following perspective as recommended by Odom et al. (2010):

The individual, focused intervention techniques that make up a comprehensive treatment model may be evidence-based. The research supporting the effectiveness of separate, individual components, however, does *not* constitute an evaluation of the comprehensive treatment model or “package.” The TIAC will consider and review only research that has evaluated the efficacy of implementing the comprehensive treatment *as a package*. Such packages are most often identifiable in the literature by a consistently used name or label.

National Research Council. (2001). *Educating children with autism*. Washington, DC: National Academy Press.

Odom, S. L., Brown, W. H., Frey, T., Karusu, N., Smith-Carter, L., & Strain, P. (2003) Evidence-based practices for young children with autism: Evidence from single-subject research design. *Focus on Autism and Other Developmental Disabilities, 18*, 176-181.

Odom, S. L., Boyd, B. A., Hall, L. J., & Hume, K. (2010). Evaluation of comprehensive treatment models for individuals with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 40*, 425-436.

Rogers, S., & Vismara, L. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology, 37*, 8-38.

Section Three: DLTC-TIAC Treatment Review Evidence Checklist

Name of Treatment: Applied behavior analysis

Level 1- Well Established or Strong Evidence (DHS 107 - Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, National Professional Development Center) have approved of or rated the treatment package as having a strong evidence base; authorities are in agreement about the level of evidence.
- There exist ample high quality studies that demonstrate experimental control and favorable outcomes of treatment package.
 - Minimum of two group studies or five single subject studies or a combination of the two.
 - Studies were conducted across at least two independent research groups.
 - Studies were published in peer reviewed journals.
- There is a published procedures manual for the treatment, or treatment implementation is clearly defined (i.e., replicable) within the studies.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: Studies reviewed included participants with ASD, PDD-NOS, and developmental disabilities who were between the ages of 0 and 4 years at the beginning of the studies.

Level 2 – Established or Moderate Evidence (DHS 107 - Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have approved of or rated the treatment package as having at least a minimal evidence base; authorities may not be in agreement about the level of evidence.
- There exist at least two high quality studies that demonstrate experimental control and favorable outcomes of treatment package.
 - Minimum of one group study or two single subject studies or a combination of the two.
 - Studies were conducted by someone other than the creator/provider of the treatment.
 - Studies were published in peer reviewed journals.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 3 – Emerging Evidence (DHS 107 – Promising as a Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have recognized the treatment package as having an emerging evidence base; authorities may not be in agreement about the level of evidence.
- There exists at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package.
 - May be one group study or single subject study.
 - Study was conducted by someone other than the creator/provider of the treatment.
 - Study was published in peer reviewed journal.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 4 – Insufficient Evidence (Experimental Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
- There is not at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package.
 - Study was conducted by the creator/provider of the treatment.
 - Study was not published in a peer reviewed journal.
- Participants (i.e., N) are not clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes:

Level 5 – Untested (Experimental Treatment) &/or Potentially Harmful

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
- There are no published studies supporting the proposed treatment package.
- There exists evidence that the treatment package is potentially harmful.**
 - Authoritative bodies have expressed concern regarding safety/outcomes.
 - Professional bodies (i.e., organizations or certifying bodies) have created statements regarding safety/outcomes.

Notes: At this level, please specify if the treatment is reported to be potentially harmful, providing documentation

Date: August 13, 2014

Committee Members Completing Initial Review of Research Base: Roger Bass, Lana Collet-Klingenberg

Committee Decision on Level of Evidence to Suggest the Proposed Treatment is Proven and Effective: Level One - Well established or strong evidence

References Supporting Identification of Evidence Levels:

- Chambless, D.L., Hollon, S.D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology*, 66(1) 7-18.
- Chorpita, B.F. (2003). The frontier of evidence---based practice. In A.E. Kazdin & J.R. Weisz (Eds.). *Evidence-based psychotherapies for children and adolescents* (pp. 42---59). New York: The Guilford Press.
- Odom, S. L., Collet-Klingenberg, L., Rogers, S. J., & Hatton, D. (2010). Evidence-based practices in interventions for children and youth with autism spectrum disorders. *Preventing School Failure*, 54(4), 275-282.

Version date 8.13.14

Section Four: Literature Review

Books:

Luiselli, J.K., Russo, D.C., Christian, W.P., & Wilczynski, S. (eds). (2009). *Effective Practices for Children with Autism: Educational and Behavior Support Interventions that Work*. New York: Oxford University Press.

Rehfeldt, R.A., and Barnes-Holmes, Y. (eds). (2009). *Derived Relational Responding Applications for Learners with Autism and Other Developmental Disabilities*. Oakland, CA: New Harbinger Publications, Inc.

Reviews of Research:

Eldevik, S., Hastings, R.P., Hughes, J.C., Jahr, E., Eikeseth, S., & Cross, S. (2010). Using participant data to extend the evidence base for Intensive Behavioral Intervention for children with autism. *American Journal on Intellectual and Developmental Disabilities*, 115, 381-405.

Eldevik, S., Hastings, R.P., Hughes, J.C., Erik, J., Svein, E., & Cross, S. (2009). Meta-Analysis of Early Intensive Behavioral Intervention for Children with Autism. *Journal of Clinical Child & Adolescent Psychology*, 38 (3), 439-450.

Horner, R. H., Carr, E. G., Strain, P. S., Todd, A. W., & Reed, H. K. (2002). Problem behavior interventions for young children with autism: A research synthesis. *Journal of Autism and Developmental Disorders*. 32, 423-446.

Howlin, P., Magiati, I., & Charman, T. (2009). Systematic review of early intensive behavioral interventions for children with autism. *American Association on Intellectual and Developmental Disabilities*, 114, 23-41.

McConnell, S. (2002). Interventions to facilitate social interaction for young children with autism: Review of available research and recommendations for educational intervention and future research. *Journal of Autism and Developmental Disorders*, 32, 351-372.

New York State Department of Health (1999). *Clinical practice guideline: Report of the recommendations. Autism/Pervasive Developmental Disorders, Assessment and Intervention for Young Children (Age 0-3 years)*. Publication No. 4215.

Reichow, B. & Wolery, M. (2009). Comprehensive synthesis of early intensive behavioral interventions for young children with autism based on the UCLA Young Autism Project model. *Journal of Autism and Developmental Disorders*, 39, 23-41.

Spreckley, M., & Boyd, R. (2009). Efficacy of applied behavioral intervention in preschool children with autism for improving cognitive, language, and adaptive behavior: A systematic review and meta-analysis. *The Journal of Pediatrics*, 338-344.

Journal Articles:

- Cohen, H., Amerine-Dickens, M., & Smith, T. (2006). Early intensive behavioral treatment: Replication of the UCLA Model in a community setting. *Journal of Developmental and Behavioral Pediatrics*, 27, 5145-5155.
- Magiati, I., Charman, T., & Howlin, P. (2007). A two-year prospective follow-up study of community based early intensive behavioral intervention and specialist nursery provision for children with autism spectrum disorders. *Journal of Child Psychology and Psychiatry*, 48, 803-812.
- Reed, P., Osborne, L. A., & Corness, M (2007). The real-world effectiveness of early teaching interventions for children with autism spectrum disorder. *Exceptional Children*, 73, 417-433.
- Remington, B., Hastings, R.P., Kovshoff, H., Degli Espinosa, F., Jahr, E., Brown, T., et al. (2007). Early intensive behavioral intervention: Outcomes for children with autism and their parents after two years. *American Journal of Mental Retardation*, 112, 418-438.
- Sallows, Glen O. & Graupner, Tamlynn D. (2005). Intensive Behavioral Treatment for Children with Autism: Four-Year Outcome and Predictors. *American Journal on Mental Retardation*, 110 (6), 417-438.
- Smith, T., Green, A., & Wynn, J. (2000). Randomized trial of intensive early intervention for children with pervasive developmental disorder. *American Journal of Mental Retardation*, 105, 269-285..

Position statements from professional organizations:

- Maine Administrators of Services for Children with Disabilities (MADSEC). (1999). Report of the MADSEC autism task force (revised ed.). Manchester, ME: Author.
- New York State Department of Health, Early Intervention Program . (1999). Clinical practice guideline: The guideline technical report. Autism/ pervasive developmental disorders, assessment and intervention for young children (Age 0-3 Years). Albany, NY: Author.

Article Reference:	Cohen, H., Amerine-Dickens, M., & Smith, T. (2006). Early intensive behavioral treatment: Replication of the UCLA Model in a community setting. <i>Journal of Developmental and Behavioral Pediatrics</i> , 27, 5145-5155.
IV Description	Early intensive behavioral treatment (ABA package) compared to school services
DV	IQ, adaptive behavior scores
# in study	42 (21 in each group)
Age ranges	Varied – under 48 months at beginning of study
Diagnoses	ASD
Study Results	Increased IQ and adaptive behavior scores in EIBT group; higher scores on communication and daily living skills (but not statistically reliable). Six of children were moved to GenEd setting.
Reviewer Comments	Three year study.

Article Reference:	Magiati, I., Charman, T., & Howlin, P. (2007). A two-year prospective follow-up study of community based early intensive behavioral intervention and specialist nursery provision for children with autism spectrum disorders. <i>Journal of Child Psychology and Psychiatry</i> , 48, 803-812
IV Description	Early intensive behavioral intervention (EIBI), compared to special nursery school program (with structured, individualized instruction, visual cues, and work with parents)
DV	IQ, language, play, adaptive behavior and autism severity
# in study	44 (28 in EIBI group; 16 in nursery school group)
Age ranges	22 – 54 months at start of study
Diagnoses	ASD
Study Results	No difference between groups, except in regard to daily living skills.
Reviewer Comments	Two year study

Article Reference:	Reed, P., Osborne, L. A., & Corness, M (2007). The real-world effectiveness of early teaching interventions for children with autism spectrum disorder. <i>Exceptional Children</i> , 73, 417-433.
IV Description	ABA, special nursery program, or home therapy program
DV	IQ, adaptive functioning
# in study	53 children across the three interventions
Age ranges	2-4 years
Diagnoses	ASD
Study Results	ABA and nursery program had greater impact than home based program on IQ and adaptive behavior.
Reviewer Comments	Conducted in UK; groups that randomly designed, implementation fidelity not assessed.

Article Reference:	Remington, B., Hastings, R.P., Kovshoff, H., Degli Espinosa, F., Jahr, E., Brown, T., et al. (2007). Early intensive behavioral intervention: Outcomes for children with autism and their parents after two years. <i>American Journal of Mental Retardation</i> , 112, 418-438.
IV Description	Early intensive behavioral intervention
DV	IQ, language, daily living skills, social behavior, parent well-being
# in study	44 (23 in EIBI group, 21 in control group receiving services “as usual”)
Age ranges	30-42 months at onset of program
Diagnoses	ASD
Study Results	Improved scores for IQ, language, daily living skills, and social behavior. Parent measures showed no ill effects of intervention on parents perspectives
Reviewer Comments	Two year study; not RCT

Article Reference:	Sallows, Glen O. & Graupner, Tamlynn D. (2005). Intensive Behavioral Treatment for Children with Autism: Four-Year Outcome and Predictors. American Journal on Mental Retardation, 110 (6), 417-438.
IV Description	Early intensive behavioral intervention, parent implemented intervention
DV	Cognitive, language, adaptive, social and academic
# in study	24 across two groups
Age ranges	24-42 months at study onset
Diagnoses	ASD
Study Results	Both groups showed improvement across all areas
Reviewer Comments	RCT

Article Reference:	Smith, T., Green, A., & Wynn, J. (2000). Randomized trial of intensive early intervention for children with pervasive developmental disorder. American Journal of Mental Retardation, 105, 269-285.
IV Description	Early intensive behavioral intervention and parent training group
DV	IQ, visual-spatial skills, language, academics, adaptive functioning, behavior problems
# in study	28 (15 in EIBI group, 13 in parent group)
Age ranges	18-42 months
Diagnoses	ASD or PDD-NOS
Study Results	EIBI group had more improvement than those in the parent training group on everything but adaptive functioning and behavior problems
Reviewer Comments	Three year study